

IN THE CLAIMS:

Please CANCEL claims 29-31 without prejudice to or disclaimer of the recited subject matter.

Please AMEND claims 16, 17, 32 and 33, and ADD new claims 34-41, as follows. For the Examiner's convenience, all the claims currently pending in this application, including those not currently being amended, have been reproduced below.

1-15. (Canceled)

16. (Currently Amended) An exposure method comprising the steps of:

illuminating a reticle, by use of light from an exposure light source;

projecting a pattern of the reticle onto an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer and on the basis of light from the exposure light source, wherein said measuring step includes (i) a step of dividing light from the light source and passed through the projection optical system into two light beams, (ii) a step of laterally shifting one of the divided two light beams relative to the other light beam, and for (iii) a step of causing interference [[of]] between the two relatively, laterally shifted light beams.

17. (Currently Amended) A device manufacturing method comprising the steps of:

preparing a reticle;

illuminating the reticle, by use of light from an exposure light source;

projecting a pattern of the reticle onto an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer and on the basis of light from the exposure light source, wherein said measuring step includes (i) a step of dividing light from the light source and passed through the projection optical system into two light beams, (ii) a step of laterally shifting one of the divided two light beams relative to the other light beam, and ~~for~~ (iii) a step of causing interference [[of]] between the two relatively, laterally shifted light beams.

18-19. (Canceled)

20. (Previously Presented) A projection exposure apparatus comprising:

a projection optical system for projecting a pattern of a reticle, illuminated with light from a light source, onto an object to be exposed;

an interferometer for measuring an optical characteristic of said projection optical system, by use of light from the light source; and

an adjusting mechanism for adjusting aberration of said projection optical system, on the basis of a result of the measurement by said interferometer, wherein said adjusting

mechanism includes driving means for moving a predetermined lens of said projection optical system.

21. (Previously Presented) An apparatus according to Claim 20, wherein said adjusting mechanism moves the predetermined lens of said projection optical system in an optical axis direction of said projection optical system.

22. (Previously Presented) An apparatus according to Claim 20, wherein said adjusting mechanism moves the predetermined lens of said projection optical system in a direction perpendicular to an optical axis direction of said projection optical system.

23. (Previously Presented) An apparatus according to Claim 20, wherein said adjusting mechanism moves the predetermined lens of said projection optical system in a direction having a tilt with respect to an optical axis direction of said projection optical system.

24-27. (Canceled)

28. (Previously Presented) A projection exposure apparatus comprising:  
a projection optical system for projecting a pattern of a reticle, illuminated with light from a light source, onto an object to be exposed;

an interferometer for measuring an optical characteristic of said projection optical system by use of light from the light source; and

an adjusting mechanism for adjusting aberration of said projection optical system on the basis of a result of measurement by said interferometer, wherein said adjusting mechanism includes at least one of a spacing adjusting mechanism for adjusting a spacing between lenses of said projection optical system, and an eccentricity adjusting mechanism for adjusting an eccentricity amount of a lens of said projection optical system.

29-31. (Canceled)

32. (Currently Amended) A projection exposure apparatus comprising:

a projection optical system for projecting a pattern of a reticle, illuminated with light from a light source, onto an object to be exposed; and

an interferometer for measuring an optical characteristic of said projection optical system by use of light from the light source,

wherein said interferometer ~~includes an optical element for dividing light passed through said projection optical system into two~~ is arranged so that (i) light from the light source and passed through said projection optical system is divided into two light beams, (ii) one of the two divided light beams is laterally shifted relative to the other light beam, and (iii) interference is caused between the two relatively, laterally shifted light beams.

33. (Currently Amended) An apparatus according to Claim 32, wherein said ~~optical element is one of a~~ interferometer includes a half mirror for dividing light from the light source and passed through said projection optical system, and a parallel plane plate for causing a lateral shift of one of the two divided light beams relative to the other light beam.

34. (New) A projection exposure apparatus according to Claim 32, wherein said interferometer measures the optical path characteristic in a single path with respect to said projection optical system.

35. (New) An apparatus according to Claim 32, wherein said interferometer is one of a radial shear type, a lateral shear type and a Twyman-Green type.

36. (New) An apparatus according to Claim 32, wherein said interferometer includes a parallel plane plate for dividing light from the light source and passed through said projection optical system and also for causing a lateral shift of one of the two divided light beams relative to the other light beam.

37. (New) A projection exposure apparatus comprising:  
a projection optical system for projecting a pattern of a reticle, illuminated with light from a light source, onto an object to be exposed; and

an interferometer for measuring an optical characteristic of said projection optical system by use of light from the light source,

wherein said interferometer is arranged to produce reference light on the basis of light from the light source and passed through said projection optical system, and also to cause interference between the reference light and the light from the light source and passed through said projection optical system.

38. (New) An apparatus according to Claim 37, wherein said interferometer includes a beam expander for producing the reference light on the basis of light from the light source and passed through said projection optical system.

39. (New) An apparatus according to Claim 37, wherein said interferometer includes a spatial filter having a pinhole, for producing the reference light on the basis of light from the light source and passed through said projection optical system.

40. (New) An apparatus according to Claim 37, wherein said interferometer measures the optical characteristic in a single path with respect to said projection optical system.

41. (New) A device manufacturing method comprising the steps of:

preparing a reticle;

illuminating the reticle by use of light from a light source;

projecting a pattern of the reticle onto an object to be exposed, by use of a projection optical system; and

measuring an optical characteristic of the projection optical system by use of an interferometer and on the basis of light from the light source, wherein said measuring step includes (i) a step of producing reference light on the basis of light from the light source and passed through the projection optical system, and (ii) a step of causing interference between the reference light and the light from the light source and passed through the projection optical system.